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Cooperative
**ECONOMIC INSECT
REPORT**

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMYWORM moths taken in light traps in Wisconsin, Tennessee, Nebraska, and Georgia. (p. 341).

BEET LEAFHOPPER required treatment on wasteland in Wyoming. Averaged 150 per 100 sweeps on sugarbeets in Arizona. (p. 341).

First ASTER LEAFHOPPER of season in southeast Wisconsin. (p. 341).

SPOTTED ALFALFA APHID building up in some New Mexico alfalfa. (p. 341).

PALE WESTERN CUTWORM damaging wheat in Wyoming. (p. 342).

ALFALFA WEEVIL adults and larvae heavy on alfalfa in California; increased in Illinois. Damage heavy on alfalfa in southern Delaware. (pp. 342-343).

TARNISHED PLANT BUG ranged 40-60 per 100 sweeps of alfalfa in central and southeastern areas of Minnesota. Heavy on crimson and hop clovers in Mississippi. (p. 344).

An ARMORED SCALE reported at record high level and APHIDS reached highest level in 18 years on Florida citrus. (p. 348).

SPRUCE NEEDLE MINER larvae damaged spruce in North Dakota. (p. 348). Eradication treatment applied to small infestation in California. (p. 351).

A GRASS BUG required treatment on 4,000 acres of seeded wheatgrass in New Mexico. (p. 351).

CEREAL LEAF BEETLE adults moving into available oats, adult damage common on wheat and oats in Michigan. (p. 351).

Detection

For new county and island records see page 346.

Special Reports

Survey Methods. Selected References 1952. Part XVII. (pp. 353-354).

Reports in this issue are for the week ending May 9 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING MAY 12

HIGHLIGHTS: Mild sunny weather prevailed over the Northwest. Heavy precipitation fell in the central Rockies and parts of the South. Numerous tornadoes struck in the South and in the Ohio River Valley.

PRECIPITATION: Violent thunderstorms, large hail, heavy rains, strong winds, and numerous tornadoes brought damage and destruction in a number of areas last week. Early in the week, the storms buffeted Texas and Oklahoma before spreading across the South to Alabama. Some of the thunderheads in the Midland, Texas, area approached 14 miles in height. At least 10 tornadoes struck the Texas Panhandle Tuesday afternoon. Hail as large as baseballs pelted spots in southern Texas. Cloudbursts dumped 7-inch rains south of Ft. Worth drowning 4 persons. Heavy precipitation (3.5 inches over the entire South Platte Basin) on Wednesday caused severe flooding along the river including its course through metropolitan Denver. Some mountain areas west of Denver received 5 to 9 inches of rain while 1 to 3 feet of snow fell in the higher mountains farther north. By midweek, precipitation became widespread across the Nation. Rain fell in 39 States on Wednesday; tornadoes occurred in Ohio, Kentucky, Texas, and Mississippi. The tornadoes caused few deaths (2 in Ohio), many injuries (50 in Ohio), and widespread property damage to trees, homes, house trailers, and powerlines. The rains continued over the eastern half of the Nation but the West became clear and sunny by Thursday. The Southeast cleared Friday but the rains continued in the Northeast over the weekend.

TEMPERATURE: Warm weather predominated from the Pacific Ocean to the northern and central Rocky Mountains with much of the intermountain area averaging 6° to 10° above normal. Temperatures averaged 6° to 10° below normal over the southern Rockies. The temperature at Douglas, Arizona, dropped to 32° on Wednesday morning. Over the Central and East, the week began warm but temperatures dropped sharply after about 3 days and weekly averages were near normal--slightly below normal from the northern Great Plains to the Southeast and slightly above normal from the Great Lakes to the middle Atlantic coast. (Summary supplied by Environmental Data Service, ESSA.)

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - WISCONSIN - Moths appearing in blacklight traps at Mazomanie, Dane County, and Hancock, Waushara County. (Wis. Ins. Sur.). TENNESSEE - Adults increasing in light trap collections, in Madison County. (Johnson). GEORGIA - One moth collected in Atlanta, Fulton County. (Ridley). NEBRASKA - Moths appearing in blacklight trap in Lincoln, Lancaster County. (Keith).

ARMY CUTWORM (Chorizagrotis auxiliaris) - NEVADA - Larvae averaged 1-2 per crown of alfalfa at Oroville, Humboldt County. Not every crown infested, but infestation general in most fields. (Lundahl). Alfalfa seed field treated in area. (Sebbas). WYOMING - Larvae ranged 0-5 (averaged 0.5) per square foot on alfalfa in Goshen and Platte Counties April 28-29. (Parshall). COLORADO - Larval damage in Weld County on alfalfa. Larvae 0-4 per square foot; numbers higher in some fields. Controls applied. (Johnson, Alldredge). NEBRASKA - Larvae ranged 5-12 per linear foot in 7 wheatfields near Grafton, Perkins County. (Hendrix).

BEET LEAFHOPPER (Circulifer tenellus) - WYOMING - Total of 6,912 acres of waste-land in Washakie and southern Big Horn Counties treated. Survey in Washakie County after spraying indicated leafhoppers reduced from 0.11 to 0.01 per square foot of weed hosts sampled; 350 square-foot samples taken. (Petersen, Parshall). ARIZONA - Averaging 150 per 100 sweeps on sugarbeets at Casa Grande, Pinal County. (Ariz. Coop. Sur.).

ASTER LEAFHOPPER (Macrosteles fascifrons) - WISCONSIN - First of season, about 1 per 100 sweeps in Kenosha and Waushara Counties. (Wis. Ins. Sur.).

TOBACCO BUDWORM (Heliothis virescens) - GEORGIA - Moderate to heavy across tobacco belt. (Girardeau).

CORN EARWORM (Heliothis zea) - ALABAMA - Recent moth flight occurred in southeast area. Second and third-stage larvae infested 20-25 percent of buds in one "knee-high" cornfield in Henry County. Few larvae on nearby cotton and vetch. (Penuel et al.). GEORGIA - Light on young soybeans, in Tift County. (Todd).

CORN LEAF APHID (Rhopalosiphum maidis) - ALABAMA - Winged adults and several nymphs on 50+ percent of 12 to 20-inch tall corn in Henry County. (McQueen).

GREENBUG (Schizaphis graminum) - ARIZONA - Light on 10 acres of wheat at Safford, Graham County. (Ariz. Coop. Sur.). NEBRASKA - One specimen in suction trap May 5-7 at Lincoln, Lancaster County. Only 2 specimens taken at site since trap started April 1, indicating very light northward movement through area. (Pruess). MINNESOTA - Trace on winter wheat and roadside bluegrass in Dakota County May 8 for first of season. (Minn. Pest Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - WISCONSIN - Nymphal averages per sweep: 3 in alfalfa near Spring Green, Sauk County, and 1 at Prairie du Chien, Crawford County. No winged forms. (Wis. Ins. Sur.). ILLINOIS - Ranged 200-300 per 100 sweeps on Grundy County alfalfa. (Ill. Ins. Rpt.). KANSAS - None found in alfalfa checked in Dickinson, Saline, McPherson, and Marion Counties. (Simpson). NEW MEXICO - Appearing in some fields checked near Albuquerque, Bernalillo County. Mostly winged adults. (Heninger, May 2). Building up in several alfalfa fields in Mesilla Valley; some fields require treatment. (N.M. Coop. Rpt.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NEW JERSEY - First-generation adults should appear in southern counties in about 7 days. (Ins.-Dis. Newsltr.). DELAWARE - First adults of season in Sussex County May 6 on roadside vegetation. Pupation averages 80 percent. (Burbutis). ILLINOIS - Pupation just beginning with high of 20 percent in east-southeast district. (Ill. Ins. Rpt.). NORTH DAKOTA - Overwintering mortality in southeast untilled cornfields ranged 0-32 (averaged 14)

percent; decrease from 19 percent in 1968. Lower mortality probably due to heavy snow cover past winter. Bird predation evident in 50 percent of fields compared to 47 percent in 1968. (Brandvik). MISSOURI - Pupation 78 percent May 7 on 24 farms in New Madrid County. First moth of season May 9 at Portageville. (Munson).

PALE WESTERN CUTWORM (*Agrotis orthogonia*) - WYOMING - Many fields in Veteran and Yoder areas, Goshen County, treated. (Skelton). Counts ranged 0-4 (averaged 2.8) per linear foot in one wheatfield in Dwyer area, Platte County, April 28. Heavy damage apparent. (Parshall).

CORN FLEA BEETLE (*Chaetocnema pulicaria*) - DELAWARE - Very heavy feeding injury, adults averaged 4-5 per plant on young corn in one area of Kent County. (Burbutis). MARYLAND - Adults feeding on emerging corn throughout Eastern Shore. Most infestations light. (U. Md., Ent. Dept.). ILLINOIS - Ranged 3-20 per plant on newly emerged sweet corn in west-southwest section. (Ill. Ins. Rpt.).

SEED-CORN MAGGOT (*Hylemya platura*) - NEW JERSEY - Caught 460 on 4 sticky boards April 30 to May 7 at Cedarville, Salem County. (Ins.-Dis. Newsltr.).

SMALL GRAINS

PALE WESTERN CUTWORM (*Agrotis orthogonia*) - OKLAHOMA - Averaged 5.5 per linear foot in wheat in western half of Texas County, 20-80 percent of tillers destroyed in some fields. (Okla. Coop. Sur.). KANSAS - Populations unchanged (0-6 per row foot) in southwest area. Many small larvae found. (DePew). NEBRASKA - Damage 10 percent in 4 of 40 wheatfields checked. Most damage at southern edge of Deuel County. (Sall, May 7). In remainder of panhandle, activity curtailed due to cool weather. Most wheat in good condition. (Hagen). Heavy local infestations in eastern Perkins County on May 8; 7 wheatfields near Grinton had 5-12 per foot; wheat 9-10 inches tall. (Hendrix). Some damage to wheat in southwestern Lincoln County south of Wallace. (Luttrell). WYOMING - Small grain being sprayed in Chugwater area, Platte County. (Spackman). COLORADO - Larvae averaged 0-4 per linear foot of drill row on wheat in most areas checked in Logan and Sedgwick Counties. (Johnson).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - MINNESOTA - Alates 1-5 per 100 sweeps on rye, winter wheat, and bluegrass in central and southeastern districts. (Minn. Pest Rpt.). WISCONSIN - Averaged 3-5 per sweep in some Sauk and Crawford County rye fields and 5 per 100 sweeps elsewhere. Alates about half of population in southern areas. (Wis. Ins. Sur.). MISSISSIPPI - Light on 30 acres of oats in Pontotoc County. (Dinkins).

WHEAT CURL MITE (*Aceria tulipae*) - OHIO - Adults light on winter wheat past 2 weeks in Holmes, Wayne, and Ashland Counties. (Nault).

BROWN WHEAT MITE (*Petrobia latens*) - NEVADA - Light to medium on barley and wheat at Lovelock, Pershing County. Damage light in drier fields; irrigation used as control. (Martinelli).

TURF, PASTURES, RANGELAND

BANKS GRASS MITE (*Oligonychus pratensis*) - NEVADA - Heavy on timothy in field in Smith Valley, Lyon County. Controls required. (Adams).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - NEW YORK - Adult averages per 100 sweeps: 19 on May 1, 22 on May 2 at Aurora, Cayuga County. In Tompkins County, on same dates weevils averaged 3 and 2 per 50 sweeps at Etna; some adults taken in flight traps facing woods in Ithaca. (N.Y. Wkly, Rpt.). PENNSYLVANIA - Adults 5 per 100 sweeps, larvae 5 per 900 sweeps on new alfalfa in Centre County May 1. (Hower). DELAWARE - Heavy damage on alfalfa in eastern Sussex County, light to moderate in other regions. (Burbutis). MARYLAND - Larvae well below normal. Ranged 5-30 per 10

sweeps in most alfalfa 12-18 inches high statewide. Appear extremely light. (U. Md., Ent. Dept.). VIRGINIA - Larvae averaged 750-1,000 per 100 sweeps (averaged 3 per stem) in 30-acre field in Rappahannock County, damage moderate to heavy. (W.A. Allen). OHIO - Egg clusters low in northwestern area; field with more than one cluster per 5 stems rare. Larvae generally 3-5 per 25 sweeps. Larvae still small and not out of terminal buds yet. In Wayne, Medina, and Holmes Counties larvae and adults about same as northwestern area. (Glass, Thobur, et al.). INDIANA - Ranged 170-260 per 100 sweeps on alfalfa. Mating pairs common in day sampling. Larval development in southeast district behind other southern districts. Larval feeding light on 20-50 percent of plants in southeast area. No larval feeding evident in 90 percent of fields in central districts, while 10 percent had 5-20 percent feeding visible. Adults ranged 90-160 per 100 sweeps, mating pairs common. Larvae ranged 0-6 per 10 sweeps. Weevil development as of May 2 behind 1968 development rate in central areas. Development in southeast district 2 weeks behind 1968 rate. (Huber, McGroarty, May 2). MICHIGAN - Adults active, 2 per 10 sweeps taken near Bath on May 1, adults flying at 10:00 A.M. on May 4 near Galien. Daylight flight of adults unusual. Grubs should appear soon. (Ruppel). WISCONSIN - Adults 3 per 25 sweeps of alfalfa in southeastern Kenosha County. Larvae averaged 1 per stem in some fields and occasionally as many as 3. Adults still filled with eggs. (Wis. Ins. Sur.). ILLINOIS - Increased very rapidly due to warm weather. Economic as far north as southern parts of west-southwest and east-southeast districts. Larval average per 100 sweeps by district: Southwest 4,978, 92 percent tip feeding; southeast 4,333, 100 percent tip feeding; east-southeast 633, 35 percent tip feeding; west-southwest 538, 21 percent tip feeding; and northeast 30, 2 percent tip feeding. Pupation just begun in southwest and southeast sections. Many fields cut or to be cut next 7 days. Parasitism variable but averaged 85 percent around Lawrenceville, Lawrence County. (Ins. Sur. Bull.).

MISSOURI - Light in southwest and west-central districts. Collected for new county records by G.W. Thomas in Henry County and by R.E. Munson in Jasper County May 7. (Munson). MISSISSIPPI - Larvae averaged 80 per square foot in 10 acres of alfalfa in Lee County. Pupation noted. Foliage damage moderate week ending May 2. Larvae per 200 stems by county: Oktibbeha 86, Pontotoc 202, and Marshall 78. Leaf damage moderate in all fields checked. (Dinkins). NEW MEXICO - Adults and larvae moderate in alfalfa near Aztec, San Juan County. (Albert, May 2). Larvae averaged 0-2 per 25 sweeps on Bernalillo County alfalfa. (Heninger, May 2). WYOMING - First larvae of season collected May 7 in Washakie County; ranged 0-6 per 100 sweeps. None found in Hot Springs County. Adults averaged 15 per 100 sweeps in Washakie and Hot Springs Counties. Alfalfa 6-12 inches tall. (Parshall). COLORADO - Larvae appearing in Logan and Sedgwick Counties. Adults and larvae range 0-10 per 100 sweeps in alfalfa. (Johnson). UTAH - Adults active on Davis County alfalfa. (Knowlton, May 7). NEVADA - Eggs, larvae, and adults in Churchill, Lyon, Pershing, and southern Washoe Counties. Females still gravid and laying eggs; larvae first to third instar. Heaviest larval counts, mostly first instar, averaged 15 per sweep at Fallon, Churchill County. (Arnett, Heringer). CALIFORNIA - Larvae and adults heavy on alfalfa in Red Bluff, Tehama County. (Cal. Coop. Rpt.).

CLOVER LEAF WEEVIL (Hypera punctata) - MISSOURI - Leaf feeding on alfalfa in southwest and west-central areas. Larvae appeared 30-80 percent infested with a fungus Entomophthora sphaeosperma. Newly emerged adults collected. (Thomas). IOWA - Half-grown larvae averaged 7 per plant in Page County. Around threshold of economic damage. (Iowa Ins. Sur.). OHIO - Larvae about 5 per 25 sweeps along northern and western State boundaries and 20-25 per 25 sweeps in west-central area, particularly in Putnam and Marion Counties. (Richter). WISCONSIN - Larvae of this and H. postica (alfalfa weevil) common; H. punctata comprises up to 50 percent of weevil population in some southeastern fields. (Wis. Ins. Sur.).

BEAN LEAF BEETLE (Cerotoma trifurcata) - MISSISSIPPI - Light on crimson and hop clovers in Oktibbeha County. About 1 per 10 sweeps. (Dinkins, May 2).

EUROPEAN CLOVER LEAF TIER (Mirificarma formosella) - CALIFORNIA - Survey revealed infestations in Sacramento, Nevada, and Yuba Counties making total of 6 infested counties. Various clovers and purple vetch (Vicia atropurpurea) known hosts to date. (Cal. Coop. Rpt.).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Adults becoming prevalent on Eddy County alfalfa. (Mathews). COLORADO - Larvae ranged 0-10 per 100 sweeps in one alfalfa field in Iliff area, Logan County. (Johnson).

TARNISHED PLANT BUG (Lygus lineolaris) - MINNESOTA - Ranged 40-60 per 100 sweeps of alfalfa in central and southeastern districts. (Minn. Pest Rpt.). WISCONSIN - Adults averaged up to 1 per sweep in some southwestern alfalfa fields. (Wis. Ins. Sur.). INDIANA - Adults ranged 2-7 per sweep throughout central third of State on alfalfa. (Huber, May 2). MISSISSIPPI - Heavy on crimson and hop clovers in Oktibbeha County. About 250 per 100 sweeps. (Dinkins, May 2).

LYGUS BUGS (Lygus spp.) - ARIZONA - Averages per 100 sweeps of alfalfa: 80 in Salt River Valley, Maricopa County, 150 at Casa Grande, Pinal County. (Ariz. Coop. Sur.). NEW MEXICO - Averages per 25 sweeps: Adults 4-12, nymphs 5-20 in alfalfa checked near Artesia, Eddy County. (Mathews). COLORADO - Counts 20-40 per 100 sweeps on alfalfa in Logan and Sedgwick Counties. (Johnson). WYOMING - Adults ranged 6-80 (averaged 33) per 100 sweeps in alfalfa in Washakie and Hot Springs Counties. (Parshall). KANSAS - Ranged 3-7 per 10 sweeps in alfalfa in Dickinson, Saline, McPherson, and Marion Counties. (Simpson). WISCONSIN - First instars numerous in Rock County. (Wis. Ins. Sur.).

PLANT BUGS (Adelphocoris spp.) - WISCONSIN - A. rapidus (rapid plant bug) nymphs appearing in southern and southeastern counties. A. lineolatus (alfalfa plant bug) nymphs 2 per sweep common on alfalfa in most areas. (Wis. Ins. Sur.).

MEADOW SPITTLEBUG (Philaenus spumarius) - MINNESOTA - Spittle masses appearing on alfalfa stems in central and southeastern districts; counts low. (Minn. Pest Rpt.). WISCONSIN - Nymphs appearing on alfalfa. Averages range from 0.5 per stem in southwestern counties to 1.3 per stem in some Wood County fields. (Wis. Ins. Sur.). OHIO - Second and third instars abundant on clover and some alfalfa in northern area. (Richter). VIRGINIA - Light to moderate on red clover and alfalfa in Rappahannock, Fauquier, and Page Counties. (W.A. Allen).

PEA APHID (Acyrtosiphon pisum) - DELAWARE - Increased, ranged 5-50 per 100 sweeps in most areas. (Burbutis). WISCONSIN - Averages per sweep: 25 on alfalfa in southern Grant and southern Lafayette Counties, about 1-2 near Wisconsin River in Sauk, Richland, and Crawford Counties. Winged forms in Sauk and Kenosha Counties. Parasitism remains high in older nymphs. Ceratomegilla maculata and Hippodamia tredecimpunctata (thirteen-spotted lady beetle) averaged up to 5 per sweep on southern Dane County alfalfa. (Wis. Ins. Sur.). MINNESOTA - Ranged 40-120 per 100 sweeps of alfalfa in central and southeastern districts. Nabids numerous; ranged 20-80 per 100 sweeps. Lady beetles present in low numbers. (Minn. Pest Rpt.). MISSOURI - Counts per 10 sweeps on alfalfa and red clover 30-950 in west-central area (Thomas) and 450-1,000 in southwest area (Munson). KANSAS - Light, 18-35 per 10 sweeps, in alfalfa in Dickinson, Saline, McPherson, and Marion Counties. (Simpson). OKLAHOMA - Moderate in alfalfa in south-central area. (Okla. Coop. Sur.). COLORADO - Light, 0-150 per 100 sweeps, on alfalfa in Logan and Sedgwick Counties. (Johnson). WYOMING - Ranged 20-150 per 100 sweeps of alfalfa in Washakie and Hot Springs Counties. (Parshall). NEVADA - Very few on alfalfa checked in Churchill, Lyon, and Pershing Counties. (Heringer).

YELLOW CLOVER APHID (Therioaphis trifolii) - MARYLAND - Ranged 10-60 per 10 sweeps in 15-acre field near Webster, Harford County. (U. Md., Ent. Dept.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Averaged 2,000 per 100 sweeps of alfalfa in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Found in 1 of 3 fields inspected in Falls and McLennan Counties; averaged 21 per acre (maximum 62). Seventeen weevils collected on flight screens, total to date 52. Total of 930 weevils caught on 21 wing traps installed at ground trash collection points in McLennan County. (Cowan et al.). ARKANSAS - Traps set in southeast, southwest, and upper Arkansas River Valley. (Boyer, Barnes). LOUISIANA - Total of 118 weevils collected from trap sites in Madison Parish. (Cleveland et al.). MISSISSIPPI - Total of 105 weevils caught in 12 sex traps in delta counties. (Pfrimmer et al.). ALABAMA - Live weevil counts made on cotton to determine overwintered populations: Henry County, one on one of four farms (average 13 per acre); Covington County, none; Monroe County, one on one of four farms (average 13 per acre). (Gamble et al.). Dallas County, six on one farm (average 80 per acre), and one on one of four farms (average 13 per acre). Autauga County, none on four farms. (Kirkpatrick et al.). Montgomery County, none in two fields. (McQueen). GEORGIA - Six overwintering weevils from 12 traps in Randolph County (Womack, May 3); one weevil from 3 traps in Spalding County (Beckham, May 3). In Randolph County, 13 weevils in 12 traps. (Womack).

BOLLWORMS (Heliothis spp.) - TEXAS - Eggs and/or larvae collected on Texas star, phlox, pincushion daisy, lizardtail, bluecurls and tube pentstemon. Twenty-one larvae collected previously from wild hosts identified as H. zea. Total to date, 149 H. zea and 1 H. virescens. One larva collected on cotton identified as H. zea. (Cowan et al.). MISSISSIPPI - A total of 45 female baited traps caught 179 males to date in delta counties. (Pfrimmer et al.). LOUISIANA - In Madison Parish, 1 H. zea and 1 H. virescens taken in light trap. (Cleveland et al.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Treatments in few cotton fields at Yuma, Yuma County. (Ariz. Coop. Sur.). ALABAMA - Isolated groups of larvae feeding on 2 to 3-leaf cotton in Henry, Monroe, Dallas, and Autauga Counties. (McQueen).

COTTON FLEAHOPPER (Pseudatomoscelis seriatus) - TEXAS - None found in 3 cotton fields inspected in Falls and McLennan Counties. Light infestations on horse-mint, evening-primrose, wild verbena, croton, and cut leaf evening-primrose. (Cowan et al.).

TARNISHED PLANT BUG (Lygus lineolaris) - MISSISSIPPI - One sex lure trap installed May 2 caught 38 specimens to date in delta counties. (Pfrimmer et al.).

COTTON APHID (Aphis gossypii) - ALABAMA - Increased rapidly in most untreated fields in Henry County. Counts 10-100 per plant on 3 to 5-leaf cotton on one farm. Some postplant controls applied. (Penvel et al.).

SPIDER MITES (Tetranychus spp.) - ALABAMA - Very heavy buildup of T. urticae (two-spotted spider mite); numerous eggs per leaf on 2 to 6-leaf cotton along field borders on 2 farms in Monroe and Autauga Counties. Light on older cotton on one farm in Montgomery County. (McQueen). ARIZONA - Tetranychus spp. required treatments in few fields at Yuma, Yuma County. (Ariz. Coop. Sur.).

TOBACCO THRIPS (Frankliniella fusca) - ALABAMA - First emergence of nymphs on young cotton buds in 2 to 5-leaf cotton in Henry and Dallas Counties; 2-6 small nymphs occurring in deformed buds. Adults continue to migrate from clovers and grasses to untreated cotton in all areas. (Pike et al.).

TOBACCO

FLEA BEETLES - GEORGIA - Moderate over tobacco belt. (Girardeau, May 3).

SUGARBEETS

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Adults emerging past 2-3 weeks in Weld, Larimer, and Boulder Counties. (Jenkins).

LYGUS BUGS (Lygus spp.) - ARIZONA - Averaging 70 per 100 sweeps at Casa Grande, Pinal County. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - NEW JERSEY - First adults of year on emerging potato foliage at Lumberton, Burlington County. Field treated with systemic insecticide. (Ins.-Dis. Newsltr.). DELAWARE - Adults and egg masses noted on commercial potatoes in Kent County. (Burbutis). MARYLAND - Adults feeding on potatoes on Eastern Shore. Heavy damage in 5 acres at Crumpton, Queen Annes County. Controls applied. Averaged 1 per 3 shoots at Crumpton. (U. Md., Ent. Dept.). VIRGINIA - First adult of season in Montgomery County. (M.W. Allen).

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) - ALABAMA - This and other flea beetles problem on several hundred acres of tomatoes in St. Clair County. Controls applied. (Jackson et al.).

TOBACCO THRIPS (Frankliniella fusca) - ALABAMA - Many adults emerged in several hundred acres of tomatoes in St. Clair County. Controls applied. (Jackson).

BEANS AND PEAS

PEA APHID (Acyrtosiphon pisum) - DELAWARE - Increased slightly; averaged 2 per 10 sweeps on peas in most areas. (Burbutis).

COLE CROPS

IMPORTED CABBAGEWORM (Pieris rapae) - DELAWARE - First larvae of season on cabbage in New Castle County. (Burbutis).

ORANGE TORTRIX (Argyrotaenia citrana) - CALIFORNIA - Larvae light in 10 acres of cabbage in Oxnard, Ventura County. (Cal. Coop. Rpt.).

GENERAL VEGETABLES

ASPARAGUS BEETLES (Crioceris spp.) - PENNSYLVANIA - First C. asparagi (asparagus beetle) adults of season on asparagus May 4 in Centre County. (Gesell). NEW JERSEY - Some controls applied to reduce heavy C. asparagi adult numbers. C. duodecimpunctata (spotted asparagus beetle) remains light but beginning to increase. (Ins.-Dis. Newsltr.).

BEAN LEAF BEETLE (Cerotoma trifurcata) - MISSISSIPPI - Heavy leaf damage on snap beans in Lee County gardens. Averaged 2 beetles per plant. (Dinkins).

ONION MAGGOT (Hylemya antiqua) - NEW JERSEY - Caught 71 on 4 sticky boards April 30 to May 7 at Cedarville, Salem County. (Ins.-Dis. Newsltr.).

BROWN WHEAT MITE (Petrobia latens) - NEVADA - Heavy in garlic field in Smith Valley, Lyon County. Controls applied. (Adams).

INSECT DETECTION

New County and Island Records - ALFALFA WEEVIL (Hypera postica) Henry and Jasper Counties, Missouri (p. 343). EUROPEAN CLOVER LEAF TIER (Mirificarma formosella) Nevada, Sacramento, and Yuba Counties, California (p. 344). A PHYCITID MOTH (Acrobasis caryivorella) Hillsborough County, Florida (p. 347). BROWN RECLUSE SPIDER (Loxosceles reclusa) Harlan County, Nebraska; Henry County, Georgia (p. 350). VAGRANT GRASSHOPPER (Schistocerca vaga) Lanai Island, Hawaii (p. 352).

DECIDUOUS FRUITS AND NUTS

ARMORED SCALES - CALIFORNIA - Lepidosaphes ulmi (oystershell scale) and Epidiaspis leperii (Italian pear scale) heavy on apple stock in nursery at Richmond, Contra Costa County. (Cal. Coop. Rpt.).

PEAR PSYLLA (Psylla pyricola) - MICHIGAN - Hatching; first instars numerous in southwestern areas. (Thompson, May 2).

CALIFORNIA PEAR-SLUG (Pristiphora abbreviata) - WASHINGTON - First larvae at petal fall stage April 28 on Bartlett pears at Donald, Yakima County. (Johnson).

OLETHREUTID MOTHS - NEW JERSEY - Trapped 28 Grapholitha molesta (oriental fruit moth) April 30 to May 7 at Glassboro, Gloucester County. (Ins.-Dis. Newltr.). WASHINGTON - First Carpocapsa pomonella (codling moth) male trapped by sex lure trap in pears April 23 at Buena, Yakima County. None trapped since during cool weather. (Johnson, Grigg).

EUROPEAN RED MITE (Panonychus ulmi) - NEW JERSEY - First-generation adults laying eggs on apple in central and southern counties. (Ins.-Dis. Newltr.). MICHIGAN - Hatch common in Allegan, Van Buren, and Berrien Counties. (Thompson, May 2). WASHINGTON - First hatch of overwintered eggs on Bartlett pear in full bloom April 24 at Yakima, Yakima County. (Johnson).

PHYCITID MOTHS (Acrobasis spp.) - FLORIDA - A. caryivorella larvae collected on pecan April 29 at Brandon, Hillsborough County. (Buehler). This is a new county record. (Fla. Coop. Sur.). ALABAMA - Overwintered A. caryae (pecan nut casebearer) larvae lightly emerged from new pecan growth and pupated in Autauga, Bullock, and other central and southern counties. Emergence of adults for egg laying should occur next 4-10 days. (Kirkpatrick et al.). NEW MEXICO - Ten A. caryae larvae in 50 pecan terminals at Carlsbad, Eddy County. (Marek, May 2).

PECAN LEAF PHYLLOXERA (Phylloxera notabilis) - ALABAMA - Light; galls appearing on isolated pecan and hickory trees in Macon, Lee, Covington, and other counties. (Barwood et al.).

CITRUS

Citrus Insect Situation in Florida - End of April - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 74 (norm 63) percent of groves; 50 (norm 40) percent economic. Increasing; will continue to be above normal and in high range. TEXAS CITRUS MITE (Eutetranychus banksi) infested 31 (norm 49) percent of groves; 14 (norm 24) percent economic. Increased but still below normal and at low level. Little change expected. Highest districts central and east. CITRUS RED MITE (Panonychus citri) infested 34 (norm 49) percent of groves; 12 (norm 19) percent economic. Below normal and in low range. Expected increase will result in scattered heavy infestations. Highest districts east and south. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 8 percent of groves; 2 percent economic. Near average level of last 4 years. Scattered heavy infestations expected through May. GLOVER SCALE (Lepidosaphes gloverii) infested 77 (norm 82) percent of groves; 10 (norm 25) percent economic. Below average and in moderate range. Increase expected. Highest districts south and east. PURPLE SCALE (L. beckii) infested 74 (norm 82) percent of groves; 5 (norm 11) percent economic. Below normal and in moderate range. Decrease will occur; very few heavy infestations expected. Highest district north. YELLOW SCALE (Aonidiella citrina) infested 77 (norm 64) percent of groves; 6 (norm 9) percent economic. Near normal and in moderate range. Slight increase expected. Highest district north. CHAFF SCALE (Parlatoria pergandii) infested 40 (norm 60) percent of groves; 2 (norm 11) percent economic. Little change expected from low and subnormal population level. Highest district north. BLACK SCALE (Saissetia oleae) infested 14 (norm 26) percent of groves; 3 (norm 10) percent economic. At lowest April level since 1963; means much lower summer population despite sharp increase in late May. Highest districts east and

west. An ARMORED SCALE (Unaspis citri) infested 17 percent of groves; moderate or heavy in 7 percent. At record high level; activity increasing. APHIDS infested 82 (norm 32) percent of groves; 21 (norm 2) percent economic. Peaked few days after mid-April and reached highest level in 18 years of record. Rapid decrease to low range expected before mid-May. MEALYBUGS currently light in 12 percent of groves. Increase expected. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

YELLOW SCALE (Aonidiella citrina) - CALIFORNIA - Heavy at Woodland, Yolo County. Infestations increasing again after decline of few years. (Cal. Coop. Rpt.).

OTHER TROP. & SUBTROP. FRUITS

MELON APHID (Aphis gossypii) - CALIFORNIA - Heavy on 1,000 Bacon avocado nursery trees at Orland, Glenn County. (Cal. Coop. Rpt.).

SMALL FRUITS

MEADOW SPITTLEBUG (Philaenus spumarius) - MARYLAND - Heavy in one acre of strawberries near Crumpton, Queen Annes County. (U. Md., Ent. Dept.).

A PTEROMALID WASP (Hemadas nubilipennis) - PENNSYLVANIA - Adults emerged May 4 in Wayne County. Much twig damage in small blueberry planting. (Gesell).

ORNAMENTALS

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Heavy damage to rose blooms continues in metropolitan Phoenix area, Maricopa County. (Ariz. Coop. Sur.).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - ALABAMA - Spotty, localized in area of pines in and around southern and eastern borders of Auburn, Lee County. Infestation recurring for 3 or more years. (Pearson et al.).

SPRUCE NEEDLE MINER (Taniva albolineana) - NORTH DAKOTA - Larvae damaged 44 percent of spruce needles at Fillmore, Benson County. Controls applied. (McBride).

CHERMIDS - PENNSYLVANIA - First Adelges cooleyi (Cooley spruce gall aphid) crawlers on Centre County fir May 6. (Gesell). WISCONSIN - A. cooleyi egg laying about complete on Colorado blue spruce in Dane County. No hatch noted on spruce or Douglas-fir. Hatch of Pineus strobi (pine bark aphid) began May 5 and Adelges strobilobius May 6 in Dane County. (Wis. Ins. Sur.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - WISCONSIN - Egg hatch one percent in Rock County May 6. (Wis. Ins. Sur.):

A SPIDER MITE (Oligonychus subnudus) - CALIFORNIA - Heavy on Monterey pine nursery stock at San Jose, Santa Clara County. (Cal. Coop. Rpt.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - MARYLAND - Heaviest in recent years on wild cherry statewide. (U. Md., Ent. Dept.). PENNSYLVANIA - As many as 10-15 tents per 10-foot wild cherry tree in lower Susquehanna Valley. (Sleesman, May 6). OHIO - Tents decreased north of U.S. Highway 40; rare north of U.S. Highway 30. Tents on Montgomery County lilac bushes. (Lang).

FOREST TENT CATERPILLAR (Malacosoma disstria) - MICHIGAN - Hatch underway in several areas in Antrim County. About 25-30 percent hatch by April 30. Some feeding in buds. (Wallner, May 2). MINNESOTA - Began hatching in International Falls April 30. Hatch 50+ percent by May 7 in several aspen forest locations within 10 miles of International Falls. (Minn. Pest Rpt.).

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) - NEW MEXICO - Feeding on poplars and elms in Dona Ana and Chaves Counties. Some pupating. (Durkin, May 2).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEVADA - Adults feeding on elm foliage in Churchill, Humboldt, Lyon, Ormsby, and southern Washoe Counties. (Nev. Coop. Rpt.). NEW MEXICO - Moderate damage to elms at Socorro, Socorro County. (Heninger). ARKANSAS - Increasing statewide. (Boyer, Barnes). TENNESSEE - Adults on elms statewide; locally heavy in central area. (Quillin).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - MINNESOTA - Adult emergence expected in 2 weeks. (Minn. Pest Rpt.).

SAWFLIES - TENNESSEE - Caulocampus acericaulis (maple petiole borer) caused moderate to heavy leaf fall from maples in central and eastern areas. (Jennings, Bogard). WISCONSIN - Profenusa canadensi laying eggs May 9 at Madison, Dane County. Eggs numerous on hawthorn. (Wis. Ins. Sur.).

A MEALYBUG (Phenacoccus dearnessi) - WISCONSIN - Males appearing May 5 in Dane County. Egg sacs on twigs May 9. (Wis. Ins. Sur.).

CICADAS (Magicicada spp.) - MARYLAND - First adult of season May 7 at Greenbelt, Prince Georges County. (U. Md., Ent. Dept.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - Total of 13 cases reported in U.S. May 4-10 as follows: TEXAS - Atascosa 1, Brewster 1, Hays 1, Kerr 1, Medina 1, McMullen 1, Presidio 1, Starr 2, Webb 1; ARIZONA - Cochise 2; NEW MEXICO - Hidalgo 1. Total of 53 cases reported in portion of Barrier Zone in Republic of Mexico April 27 to May 3 as follows: Sonora 18, Chihuahua 18, Coahuila 1, Nuevo Leon 6, Tamaulipas 10. One case reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 48,968,000; New Mexico 2,280,000; Arizona 8,872,000; Mexico 89,770,000. (Anim. Health Div.).

HORN FLY (Haematobia irritans) - SOUTH CAROLINA - Building up on beef animals in Abbeville, Laurens, and Cherokee Counties. (Kissam, May 7). GEORGIA - Averaging 200+ per head on untreated beef cattle in Polk County. (Nolan, May 2). Heavy on Spalding County cattle. (Dupree). MISSISSIPPI - Moderate to heavy, 200-300 per head, on 50 beef cattle in Oktibbeha County. (Dinkins, May 2). TENNESSEE - Appearing on cattle across State. (Johnson et al.). MISSOURI - Light, 20-120 (averaged 50) per head, in Howell County. (Peters). OKLAHOMA - Averaged 200 per head on Major County cattle. Light to moderate in Cleveland and Garvin Counties. (Okla. Coop. Sur.). ARIZONA - Heavy in untreated feedlots in Maricopa County. (Ariz. Coop. Sur.).

FACE FLY (Musca autumnalis) - MARYLAND - First adults of season, 2-5 per head, on 20 beef cattle near Norbeck, Montgomery County, and 15 dairy cattle near Darlington, Harford County. (U. Md., Ent. Dept.).

MOSQUITOES - NEVADA - Adults heavy in many areas. (Nev. Coop. Rpt.). UTAH - Annoying at Farmington and Woods Cross, Davis County, and at St. George and Washington fields, Washington County. (Knowlton, May 7). ALABAMA - Culex pipiens quinquefasciatus built up rapidly. (Barwood et al.). WISCONSIN - Becoming

nuisance in northern three-quarters of State. (Wis. Ins. Sur.). MARYLAND - Aedes cantator abundant in local areas along bay in Anne Arundel County. A. sollicitans and A. canadensis active on Eastern Shore. (U. Md., Ent. Dept.).

BLACK FLIES - MARYLAND - Heavy near Mar-Lu Ridge, Frederick County, near Potomac River. (U. Md., Ent. Dept.). NORTH DAKOTA - Simulium venustum adults emerged along Sheyenne River in Cass County and annoying livestock. Up to 12 per ear on horses. (Brandvik).

SHORT-NOSED CATTLE LOUSE (Haematopinus eurytetrus) - OKLAHOMA - Principal species on cattle checked at Stilwell, Adair County. (Okla. Coop. Sur.).

AMERICAN DOG TICK (Dermacentor variabilis) - MARYLAND - Very abundant in wooded area and as high as 6-10 per person at Greenbelt, Prince Georges County. (U. Md., Ent. Dept.). PENNSYLVANIA - First tick of season on man April 15 in Perry County. (Sleesman). WISCONSIN - Becoming nuisance in some central areas. (Wis. Ins. Sur.).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Averaged 25 per 6-square-inch area (foreleg, cod, and tailhead) on calves checked in Cherokee County. Activity high in eastern recreation areas. (Okla. Coop. Sur.). GEORGIA - Increasing along coastal recreational areas. (Snoddy, Nolan, May 3).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - NEBRASKA - Bit man at Falls City, Richardson County. Identification confirmed. (Aitken, May 2). One specimen taken at Alma, Harlan County, for new county record. (Peterson, May 8). GEORGIA - Two specimens in home in Henry County. (Beshear). This is new county record. (PPC).

HOUSEHOLDS AND STRUCTURES

SMOKY-BROWN COCKROACH (Periplaneta fuliginosa) - NORTH CAROLINA - Collected February 27 and April 24, 1969, in dwellings at Raleigh, Wake County, by C.G. Wright. Second and third records for county; first reported July 10, 1966. (Weekman).

A SUBTERRANEAN TERMITE (Reticulitermes tibialis) - CALIFORNIA - Winged forms heavy in residence at Sacramento, Sacramento County. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

LADY BEETLES - ALABAMA - Many Hippodamia convergens (convergent lady beetle) larvae and adults feeding on cotton aphids in southern and central areas. One to 8 per 3 to 5-leaf cotton in large field in Henry County. (McQueen). OHIO - Lady beetles common, especially in many northwestern alfalfa fields with 10 per 25 sweeps. (Richter). Coleomegilla maculata common on Berrien County grain. (Ruppel, May 2). WYOMING - Lady beetle adults averaged 4 per 100 sweeps on alfalfa in Washakie and Hot Springs Counties. (Parshall). NEW MEXICO - Lady beetles averaged 5-15 adults per 25 sweeps on northern Eddy County alfalfa. (Mathews).

DAMSEL BUGS (Nabis spp.) - ARIZONA - Averaging 50 per 100 sweeps of alfalfa in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.). WYOMING - Nabis sp. adults averaged 3 per 100 sweeps of alfalfa in Washakie and Hot Springs Counties. (Parshall). OHIO - Nabis sp. common statewide in almost every field. Many northwestern fields had 4 adults per 25 sweeps. (Richter).

A MIRID BUG (Deraeocoris brevis) - WASHINGTON - This predator very low at Wenatchee, Chelan County, indicating high adult winter mortality. (Burts, May 2).

AN ENCARTID WASP (Trechnites insidiosus) - WASHINGTON - Slightly heavier than normal, apparently due to good winter survival at Wenatchee, Chelan County. (Burts, May 2).

GREEN LACEWINGS (Chrysopa spp.) - WASHINGTON - Many adults coming to lights April 23 at Okanogan, Okanogan County. (Rushmore). OHIO - C. oculata (golden-eye lacewing) adults active in fields in south last period and in north this period. (Richter).

A PHYTOSEIID MITE (Typhlodromus occidentalis) - WASHINGTON - Adults preying on Panonychus ulmi (European red mite) larvae in unsprayed prune orchard April 24 at Wapato, Yakima County. First eggs observed April 29 in Tetranychus mcdanieli infestation on apples in full bloom in Yakima, Yakima County. (Johnson).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - OHIO - Adults averaged 50 (maximum 150) per 100 sweeps in 3 Tuscarawas County wheatfields. Averaged 1 egg per 6 row feet in 4 Wayne County oatfields. (Treece). Adults 31 per 100 sweeps in few Morrow County oatfields. (Reutter). Six pairs in six linear feet of oats in Huron County. (Richter). MICHIGAN - Adults active past 10 days in wheat and moving into available oats. Adult damage common in wheat and oats May 4 near Galien, Berrien County. Adults ranged 2-14 (averaged 5) per row foot in oatfield. About 1 egg per stem in one wheatfield. Few eggs in oats. (Ruppel).

A GRASS BUG (Labops sp.) - NEW MEXICO - About 4,000 acres of seeded wheatgrass rangeland north of Cuba, Sandoval County, Santa Fe National Forest, treated. Control after one day fair to good. (N.M. Coop. Rpt., May 2).

GRASSHOPPERS - NEVADA - Mostly Oedaleonotus enigma hatching at Oroville, Humboldt County, and Reese River, Lander County. (Burnett). NEW MEXICO - Hatch beginning in desert areas east of Albuquerque, Bernalillo County. (Hutcherson, May 2). WYOMING - Ageneotettix deorum and Aulocara ellioti first instars 3-4 per square yard northwest of Lingle, Goshen County, May 2. (Patch). Counts at Guernsey study area, Platte County, May 2 averaged per 100 square feet: Cordillacris occipitalis and Amphitornus coloradus first instars 1, Melanoplus confusus second and third instars 1.5, Xanthippus corallipes fourth instars 0.5, Psoloessa delicatula fifth instars and adults 9.5, Arphia conspersa adults 0.5, and Eritettix simplex tricarinatus adults 1.5. Eight P. delicatula and 1 A. conspersa adults in 100-square-foot sample May 3 at Glendo study area, Platte County. (Pfadt).

GYPSY MOTH (Porthetria dispar) - NEW JERSEY - Larvae active May 1 at Jockey Hollow, Morris County; heavy at Locust in Highlands, Monmouth County. (Ins.-Dis. Newsltr.). PENNSYLVANIA - Hatch 50 percent April 30 in Berks and Schuylkill Counties. (Jeffery).

MORMON CRICKET (Anabrus simplex) - NEVADA - First to third instars in Humboldt Canyon and Rosebud Canyon at Seven Troughs area, Pershing County. (Burnett).

PINK BOLLWORM (Pectinophora gossypiella) - NEVADA - First male and female of season in hexalure baited modified Frick traps May 7 in Moapa Valley, Clark County. Soil samples from 41 acres on which cotton was grown last year in same area yielded 12 larvae and 2 pupae; indicates overwintering population of 15,000 per acre. (Nev. Coop. Rpt.).

SPRUCE NEEDLE MINER (Taniva albolineana) - CALIFORNIA - Light on 2 blue spruce trees at Sierraville, Sierra County. New infestation given eradication treatment. Infestations in Modoc, Lassen, and Plumas Counties eradicated. (Cal. Coop. Rpt.).

HAWAII INSECT REPORT

General Vegetables - LEAF MINER FLIES (Liriomyza spp.) increasing on green onions at Koko Head, Waimanalo, Kahuku, and Waianae, Oahu. Medium in some fields. More increase expected. SOUTHERN GREEN STINK BUG (Nezara viridula) nymphal and adult buildup slight on snap and yard-long beans in farms at Waimanalo, Oahu. (Sato). TOBACCO FLEA BEETLE (Epitrix hirtipennis) adults medium, damage heavy, in acre of eggplants at Kaumakani, Kauai. Adults light, averaged 4 per leaf, damage light on eggplants at Koko Head and Pearl City, Oahu. (Sugawa, Funasaki). BLACK SLUG (Veronicella leydigi) and PINK-WINGED GRASSHOPPER (Atractomorpha sinensis) heavily damaging 0.5 acre of Chinese cabbage at Papaikou, Hawaii Island. Slugs 3-4 per plant. DIAMONDBACK MOTH (Plutella xylostella) larvae and pupae heavy, adults light, in 0.75 acre of head cabbage at Papaikou, Hawaii Island. (Matayoshi). MELON FLY (Dacus cucurbitae) larvae in 20-30 percent of unsprayed tomatoes in gardens at Hilo, Hawaii Island. (Yoshioka).

Fruits - All stages of a STINK BUG (Plautia stali) remain light on common guava fruits at Waimanalo and Kaneohe, Oahu; medium to heavy on strawberry guava at Koko Head. Adults light on ornamental pomegranate fruits at Kaneohe and Koko Head. (Kawamura et al.).

Man and Animals - Collected 386 Aedes vexans nocturnus and 1,251 Culex pipiens quinquefasciatus from 49 light traps on Oahu in April. Catches per trap ranged from zero to highs of 285 for Aedes and 264 for Culex at Waiahole. (Mosq. Cont. Br., Dept. of Health).

Structure - First significant FORMOSAN SUBTERRANEAN TERMITE (Coptotermes formosanus) swarm of year on Oahu. Large swarms at Honolulu, Kailua, Kaneohe, Kahuku, Nanakuli, and many other areas. (Au).

Beneficial Insects - Adults of a SCIOMYZID FLY (Sepedon sauteri) light in small taro planting at Kaumakani, Kauai. Becoming common on Kauai in taro areas and other localities where freshwater snails abound. Introduced from Japan in 1966 to aid control of Lymnaea ollula (liverfluke snail). (Sugawa).

Miscellaneous Insects - VAGRANT GRASSHOPPER (Schistocerca vaga) female caught in Polihua Beach area, Lanai, for a new island record. Previously found only on Oahu, Kauai, and Molokai. (Kajiwara). A LONGHORN GRASSHOPPER (Euconocephalus nasutus) loud and annoying at night in weeds at Ewa, Waipahu, and Waianae on Oahu. Two males captured at Ewa; several adults escaped at Waipahu. (Au, Otsuka).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 5/6-7, BL - Armyworm (Pseudaletia unipuncta) 1, beet armyworm (Spodoptera exigua) 2, black cutworm (Agrotis ipsilon) 3, cabbage looper (Trichoplusia ni) 1, corn earworm (Heliothis zea) 2, granulate cutworm (Feltia subterranea) 19, yellow-striped armyworm (Prodenia ornithogalli) 1. KANSAS - Walcott, 5/7, BL - Armyworm 3. MISSISSIPPI - Stoneville, 5/3-9, 2BL, Armyworm 16, beet armyworm 3, black cutworm 12, corn earworm 14, granulate cutworm 4, salt-marsh caterpillar (Estigmene acrea) 3, yellow-striped armyworm 2. MISSOURI - Fair Grove, 5/1-7 - Armyworm 28, black cutworm 1, variegated cutworm (Peridroma saucia) 5. Portageville 5/3-9 - Armyworm 4, European corn borer (Ostrinia nubilalis) 1. TEXAS - Waco, 5/3-9, 66-79°F., precip. 2.62 - Armyworm 4, black cutworm 2, corn earworm 18, granulate cutworm 8, variegated cutworm 21, yellow-striped armyworm 12.

SURVEY METHODS

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Part XVII

Additional copies of Parts I through XVI of this bibliography are available from Survey and Detection Operations.

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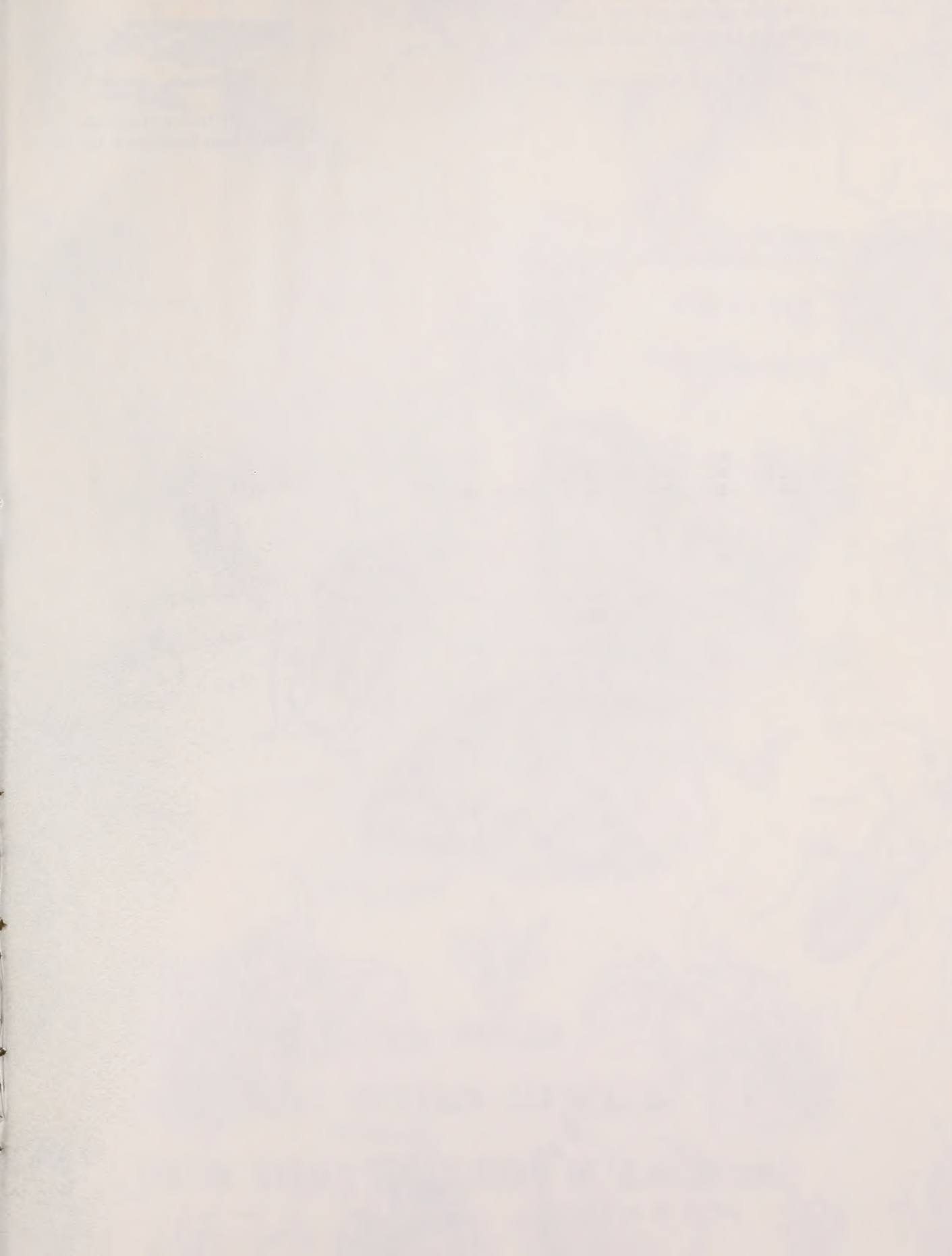
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